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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,881	01/20/2004	Nathaniel Frampton	2002-019-C	1880
32170 7590 03/13/2007 U.S. ARMY TACOM-ARDEC ATTN: AMSTRA-AR-GCL BLDG 3 PICATINNY ARSENAL, NJ 07806-5000			EXAMINER CRAIG, DWIN M	
			ART UNIT 2123	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/707,881		FRAMPTON ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Dwin M. Craig		2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

1. Claims 1-17 have been cancelled, claims 18-35 have been presented for examination.

#### *Response to Arguments*

2. The Examiner thanks the Applicants' for submitting a new Oath and withdraws the previous objection to the same.

2.1 In view of Applicants' canceling the previously presented claims and presenting new claims, the examiner agrees with the Applicants' argument as presented on page 13 of the 12/29/06 responses in that the previous rejections are moot in view of the newly presented claims.

- 2.1 An updated search based upon the scope of the newly presented claims has revealed new art.

#### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 18-35 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 23-40 of Application No. 10/707,879. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

The claims of application 10/707,879 contain every element of claims 18-35 of the instant application and as such anticipate claims 18-35 of the instant application. *In re Goodman*, 29 USPQ2d 2010 (CAFC 1993)

“A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. *In re Longi*, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); *In re Berg*, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (Affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus).” *ELI LILLY AND COMPANY v BARR LABORATORIES, INC.*, United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

3.1 Claims 18-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 25-42 of copending Application No. 10,707,882 in view of US Patent 5,461,559 to Heyob.

The only distinct difference between the instant claims and the co-pending claims in Application #10,707,882 is the claimed use of a neural network. Heyob teaches the use of a neural network with a model-based controller (see Figure 5 item # 544 “Artificial Neural Network Process Model (VII)”).

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At the time of the invention, it would have been obvious, to an artisan of ordinary skill in the model based controller art, to have used a neural network in a model based control system because of the advantages of a learning network provides for a continuous process.

This is a provisional obviousness-type double patenting rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 18-21, 25-27 and 29-35 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,461,559 to Heyob.

4.1 Regarding independent claims 18, 34 and 35 and using independent claim 18 as an example, Heyob discloses, *a model based controller (Figure 7 and the descriptive text) for control of a full industrial process comprising a plurality of steps, at least one of which involves a mechanical operation, said model based controller comprising (Figure 2 Knudsen Cell, Figures 3 PID Control Loop, Col. 1 lines 26-27 more specifically, “The present invention relates generally to a hierarchical control system for Molecular Beam Epitaxy (MBE)...” the examiner notes that this process of Molecular Beam Epitaxy is being used to control temperature which in turn effects a mechanical operation), a development environment comprising at least one recipe for an industrial process, each recipe comprising a plurality of process steps at least one of which comprises crystallization, and which process steps are defined by a plurality of models,*

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*with each model corresponding to at least one process step within said recipe;* (Col. 1 lines 31-32 “A recipe is input by the MBE operator...” and Col. 2 lines 2-5 “These measurements are used to select the temperatures of the Knudsen Cells to obtain the desired compositions as well as growth times for layers in the recipe” the growth being referred to here is growth of a crystal which is teaching *crystallization* the *layers* of the recipe teaches multiple process steps, see also, Col. 4 lines 20-54 more specifically, “evolving neural network model” and Col. 6 lines 22-52 more specifically, “...growing the thin-film semiconductor wafer...” and regarding a development environment see Figure 5 and Col. 16 lines 58-67 “...Growth Recipe Editor...” and Col. 17 lines 1-43 regarding models and regarding the development environment see Col. 18 lines 1-60 “Symantec’s Thick C, Version 5.0...” and “This modular design through IAC data linking allow as new or enhanced program modules...”),

*an execution environment in operative communication with said development environment, and which execution environment comprises an execution platform capable of executing a recipe from said development environment* (Col. 18 lines 61-67 and Col. 19 lines 1-18 and Col. 20 lines 1-18 more specifically “Real time control capability which will improve the control of process as sensor technology becomes available” and the Figure in Col. 133 & 134 and Col. 18 lines 24-27 more specifically, “The Execution block (EB) is the unique function of the particular program that depends upon the initialization, user commands, and IAC data from other programs to perform its designed tasks...”),

*a coordination environment in operative communication with said execution environment and, through said execution environment, with said development environment, and which coordination environment coordinates information flow from said execution environment, and*



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*through said execution environment , said development environment and said model;* (see Figure 14 and Col. 18 lines 22-25 more specifically “The “Inter-Application Communication” Block (IAC) block handles the transmission of data and commands to and from all of the other multi-tasking programs in the MBE control system...”),

*a control level in operative communication with said coordination environment* (see Figure 14 and Col. 18 lines 22-25 more specifically “The “Inter-Application Communication” Block (IAC) block handles the transmission of data and commands to and from all of the other multi-tasking programs in the MBE control system...”) *and, through said coordination environment, with said execution environment and said development environment, and in operative communication with at least one controller* (Figure 5 item #570 and Figure 3 item # 34 and the descriptive text) *which is capable of controlling at least one mechanical operation in the execution of at least one crystallization process step* (Col. 7 lines 3-65 and Col. 8 lines 1-5) *as defined by said model and communicated by said coordination environment* (Figure 5 items #564, 542, 544, 451, 546 and 570);

*and wherein, said controller sends a control command corresponding to a mechanical operation step defined by said model communicated to said controller* (Figure 22 and the descriptive text) *from said model within said development environment through said execution environment and through said coordination environment, to said mechanical component,* (Col. 16 lines 50-57 “for minimizing crystalline defects...” *which is a mechanical defect) and said mechanical component sends component information element to said controller, which component information element is communicated through said coordination environment to said execution environment in which the performance of said process step may be varied in*

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*accordance with said component information element* (all of Figures 4 & 5 and the descriptive text and Figure 19 and Col. 14 lines 36-67 and Col. 15 lines 1-45 see also Col. 16 lines 58-67).

4.2 Regarding claim 19 Heyob discloses, *wherein the coordination of said model with said controller comprises data flow between said model and said controller* (Figure(s) 4, 7 and 14 see also Col. 18 lines 1-67 and Col. 19 lines 1-5 and Col. 20 lines 1-20).

4.3 Regarding claim 20 Heyob discloses, *wherein said controller is adapted to control a plurality of components* (Figure 3 the controller controls “SCR Power Controller Item 36 and Kundsén Cell item # 20 see also Figure 5).

4.4 Regarding claim 21 Heyob discloses, *wherein said development environment further comprises a recipe generator communicatively coupled to said plurality of models and comprising means to add or amend recipes* (Figure 5 item #546 and item # 544 and the descriptive text see also Figure 4 item # 450 and Col. 20 line 11 “Faster new recipe development...” and Col. 10 lines 32-61).

4.5 Regarding claim 25, Heyob discloses, *wherein said execution environment comprises resources for real-time control of execution mode* (Col. 20 lines 6-8, “Real time control capability...”).

4.6 Regarding claim 26, Heyob discloses, *wherein said execution environment further comprises means to display the execution of said process* (Figures 11, 15 and Col. 83 & 85 and the descriptive text).

4.7 Regarding claim 27, Heyob discloses, *wherein said execution environment further comprises means to monitor and control said process* (Figures 11, 15 and Col. 83 & 85 and the



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descriptive text and Col. 17 lines 58-67 and Col. 1 line 1, *et seq.* and Figure 5 and the descriptive text).

4.8 Regarding claim 29, Heyob discloses, *wherein said coordination environment further comprises code for enabling communication* (see Figure 14 and Col. 18 lines 22-25 more specifically “The “Inter-Application Communication” Block (IAC) block handles the transmission of data and commands to and from all of the other multi-tasking programs in the MBE control system...”).

4.9 Regarding claim 30, Heyob discloses, *wherein said coordination environment further comprises code for modifying at least one recipe associated with said controller* (Figure 5 item #546 and item # 544 and the descriptive text see also Figure 4 item # 450 and Col. 20 line 11 “Faster new recipe development...” and Col. 10 lines 32-61).

4.10 Regarding claim 31, Heyob discloses, *wherein said code is responsive to at least one of said models* (Figure 5 items #'s 544, 451 and 546 and the descriptive text and the APPENDIX Col. 21-78).

4.11 Regarding claim 32, Heyob discloses, *wherein said execution environment further comprises at least one interface adapted to present information indicative of one of said models and said at least one component to a user* (Figure 5 item #'s 546, 451 and Col. 18 lines 1-67 and Col. 19 & 20 see also Figure B2 in Col. 85 & 86).

4.12 Regarding claim 33, Heyob, discloses, *comprising code for enabling said user to employ said interface to modify said model* (Figure B2 in Col. 85 & 86 “Build user interface”).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,461,559 to Heyob in view of U.S. Patent 6,125,442 to Maves.

5.1 Regarding claim 22, Heyob does not expressly disclose, *further comprising at least one server being communicatively coupled to said development environment and to said plurality of models.*

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However, Maves teaches, a development environment connected to a server and a plurality of models (Figure 3 item #'s 112 and 102 and item 110).

Heyob and Maves are analogous are because they are from the same problem solving area of server based models and execution environments.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the model based controller methods of Heyob with the server execution environment teachings of Mave.

The motivation for doing so would have been, to provide the ability to use the legacy software methodologies of Heyob as a “model” invoked by the software library methods of Maves in order to take advantage of the advanced software execution and development methods of Maves to provide a distributed execution system on a network that is more flexible and expandable, see Col. 39 lines 34-65 and Col. 40 lines 1-52 of Maves) the overall advantage would be to provide an expandable database for future models of the system (see Abstract of Maves) further advantages of Maves that would provide motivation for the modification of Hetob are disclosed in Maves, Col. 7 lines 25-57 more specifically, “using a Run Time Events Manager in connection with a set of Models, in which one of the Models provides a means of integrating legacy software into a newly-developed application...” provides a motivation to use the disclosed methodologies so the software as disclosed in Heyob can be upgraded.

Therefore, it would have been obvious to combine Mavves with Heyob to obtain the invention specified in claims 22-24.

5.2 Regarding claim 23, Heyob does not expressly disclose, *comprising at least one server being communicatively coupled to said development environment and to said plurality of models.*

However, Maves teaches, a development environment connected to a server and a plurality of models (Figure 3 item #'s 112 and 102 and item 110).

5.3 Regarding claim 24, Heyob does not expressly disclose, *wherein said coordination environment comprises a server.*

However, Maves teaches, a development environment connected to a server and a plurality of models (Figure 3 item #'s 112 and 102 and item 110).

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,461,559 to Heyob in view of U.S. Patent 5,812,394 to Lewis.

6.1 Regarding claim 28 Heyob does not expressly disclose a Programmable Logic Controller.

However, Lewis discloses a Programmable Logic Controller (Col. 4 lines 16-22 and Col. 5 lines 10-12 and Col. 6 lines 55-59).

Heyob and Lewis are analogous art because they are from the same problem solving area of model based controllers used for controlling industrial processes.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the model based controller methods of Heyob with the model based controller methods of Lewis.

The motivation for doing so would have been to reduce the amount of time required to program an industrial control environment and realize improved efficiency (see Lewis Col. 11 lines 50-67).

Therefore, it would have been obvious to combine Lewis with Heyob to obtain the invention as specified in claim 28.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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3/9/07